

QB365 Question Bank Software Study Materials

Zoology - Molecular Genetics 50 Important 1 Marks Questions With Answers (Book Back and Creative)

12th Standard

Biology

Total Marks : 50

Multiple Choice Question

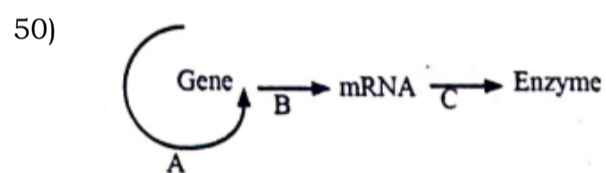
50 x 1 = 50

- 1) Hershey and Chase experiment with bacteriophage showed that _____.
(a) Protein gets into the bacterial cells **(b) DNA is the genetic material** (c) DNA contains radioactive sulphur
(d) Viruses undergo transformation
- 2) DNA and RNA are similar with respect to _____.
(a) Thymine as a nitrogen base (b) A single-stranded helix shape
(c) Nucleotide containing sugars, nitrogen bases and phosphates
(d) The same sequence of nucleotides for the amino acid phenyl alanine
- 3) A mRNA molecule is produced by _____.
(a) Replication **(b) Transcription** (c) Duplication (d) Translation
- 4) The total number of nitrogenous bases in human genome is estimated to be about _____.
(a) 3.5 million (b) 35000 (c) 35 million **(d) 3.1 billion**
- 5) E. coli cell grown on ¹⁵N medium are transferred to ¹⁴N medium and allowed to grow for two generations. DNA extracted from these cells is ultracentrifuged in a cesium chloride density gradient. What density distribution of DNA would you expect in this experiment?
(a) One high and one low density band (b) One intermediate density band.
(c) One high and one intermediate density band. **(d) One low and one intermediate density band**
- 6) What is the basis for the difference in the synthesis of the leading and lagging strand of DNA molecules?
(a) Origin of replication occurs only at the 5' end of the molecules (b) DNA ligase works only in the 3' → 5' direction
(c) DNA polymerase can join new nucleotides only to the 3' end of the growing strand.
(d) Helicases and single-strand binding proteins that work at the 5' end
- 7) Which of the following is the correct sequence of event with reference to the central dogma?
(a) Transcription, Translation, Replication (b) Transcription, Replication, Translation
(c) Duplication, Translation, Transcription **(d) Replication, Transcription, Translation**
- 8) Which of the following statements about DNA replication is not correct?
(a) Unwinding of DNA molecule occurs as hydrogen bonds break.
(b) Replication occurs as each base is paired with another exactly like it
(c) Process is known as semi conservative replication because one old strand is conserved in the new molecule.
(d) Complementary base pairs are held together with hydrogen bonds
- 9) Which of the following statements is not true about DNA replication in eukaryotes?
(a) Replication begins at a single origin of replication. (b) Replication is bidirectional from the origins.
(c) Replication occurs at about 1 million base pairs per minute
(d) There are numerous different bacterial chromosomes, with replication occurring in each at the same time.
- 10) The first codon to be deciphered was _____ which codes for _____.

- (a) AAA, proline (b) GGG, alanine **(c) UUU, Phenylalanine** (d) TTT, arginine
- 11) Meselson and Stahl's experiment proved
- (a) Transduction (b) Transformation (c) DNA is the genetic material
(d) Semi-conservative nature of DNA replication
- 12) An operon is a: _____.
- (a) Protein that suppresses gene expression (b) Protein that accelerates gene expression
(c) Cluster of structural genes with related function (d) Gene that switched other genes on or off
- 13) When lactose is present in the culture medium:
- (a) Transcription of lac y, lac z, lac a genes occurs. (b) Repressor is unable to bind to the operator.
(c) Repressor is able to bind to the operator. **(d) Both (a) and (b) are correct.**
- 14) _____ used radioactive labelled molecules to prove that DNA is the genetic material.
- (a) Hershey and Chase** (b) Wilkins and Franklin (c) Griffith (d) Mcleod and Avery
- 15) _____ demonstrated that RNA is the genetic material in RNA containing viruses.
- (a) Avery **(b) Conrat and Singer** (c) Griffith (d) Watson and Crick
- 16) _____ proposed a model for the nucleosome.
- (a) Dupraw (b) Messelson **(c) Kornberg** (d) Griffith
- 17) A nucleosome has _____ histone protein molecules.
- (a) 6 **(b) 8** (c) 10 (d) 24
- 18) Messelson and Stahl _____.
- (a) proved that RNA is the genetic material (b) proved that protein synthesis is dependent on DNA
(c) proved the semi conservative mode of DNA replication. (d) discovered enzymes involved in replication
- 19) DNA finger printing technique was developed by
- (a) Frederick Sanger **(b) Alex Jeffrey** (c) Hershey (d) Rosalind Franklin
- 20) The codon _____ has dual function.
- (a) UAA **(b) AUG** (c) UGA (d) UUU
- 21) Human genome is approximately said to have _____ base
- (a) 3×10^8 bp (b) 3.4×10^9 bp (c) 3.2×10^7 bp **(d) 3×10^9 bp**
- 22) Chromosome _____ has 231 genes only.
- (a) X (b) 19 **(c) Y** (d) 22
- 23) The diagram shows an important concept in the genetic implication of DNA. Fill in the blanks A to C.
- A B C
DNA → mRNA → protein → proposed by _____
- (a) A - transcription, B-replication, C- James Watson (b) A - transcription, B-transcriptioii, C-Erwin
(c) A - transcription, B - translation, C - Francis Crick (d) A- transcription, B- extension, C-Rosalind Franklin
- 24) Which one of the following pairs of codons is correctly matched with their function or the single for the particular amino acid?
- (a) GUU, GCU - Alanine **(b) UAG, UGA - Stop codon** (c) AUG, ACG - start/methionine (d) UUA, UCA - Leucine
- 25) The Okazaki fragments in DNA chain growth

- (a) **Result in transcription** (b) Polymerise in the 3' to 5' direction and forms replication fork
- (c) Prove semi-conservative nature of DNA replication
- (d) Polymerises in the 5' to 3' direction and explain 3'to 5' DNA replication
- 26) In Hershey - Chase experiment, the DNA of T₂ phase was made radioactive by using _____
- (a) **32p** (b) 35_s (c) 35_p (d) 32_s
- 27) If the length of E. coli DNA is 1.36 mm, the number of base pairs is _____
- (a) 0.36 x 10⁶m (b) **4 x 10⁶m** (c) 0.34 x 10⁻⁹mm (d) 4 x 10⁻⁹m
- 28) Assertion (A): Genophore is noticed in prokaryotes.
Reason (R): Bacteria possess circular DNA without chromatin organisation.
- (a) Both A and R are correct (b) A is correct R is incorrect (c) **R explains A** (d) A is incorrect R is correct
- 29) Assertion (A): Heterochromatin is transcriptionally active.
Reason (R): Tightly packed chromatin which stains dark
- (a) Both A and R are correct (b) A is correct R is incorrect (c) R explains A (d) **A is incorrect R is correct**
- 30) Identify the incorrect statement
- (a) Replication occurs at ori - site of DNA (b) Deoxy nucleotide triphosphate acts as a substrate
- (c) **Unwinding of DNA strand is carried out by topoisomerase** (d) DNA polymerase catalyses the polymerization at 3'-OH
- 31) Identify the triplet pairs that code for Tyrosine
- (a) UUU, UUC (b) **UAU, UAU** (c) UGC, UGU (d) CAU, CAC
- 32) In sickle cell anaemia, the _____ codon of β - globin gene is modified
- (a) Eighth (b) Seventh (c) **Sixth** (d) Ninth
- 33) Lac Z gene codes for _____
- (a) Permease (b) transacetylase (c) **β-galactosidase** (d) Aminoacyl transferase
- 34) _____ experiment proved that DNA is the genetic material
- (a) **Greger meutal** (b) William Joghkson (c) GriFFiith's (d) Altman
- 35) Each nucleotide sub unit is composed of parts
- (a) **Three** (b) Two (c) Four (d) Five
- 36) In bacteria a transcription and translation can be _____
- (a) **single** (b) coupled (c) Both A & B (d) None of this
- 37) The scientists involved in discovery of DNA as chemical basis of heredity were
- (a) Hershey and Chase (b) Griffith and Avery (c) **Avery, Mac Leod and MC Carty** (d) Watson and Crick
- 38) In DNA replication, the primer is
- (a) small deoxyribonucleotide polymer (b) **small ribonucleotide polymer** (c) helix destabilizing protein
- (d) enzyme taking part in joining nucleotides to their complementary template bases
- 39) Okazaki fragments give rise to
- (a) master strand (b) sense strand (c) **lagging strand** (d) leading strand
- 40) DNA act as a template for synthesis of
- (a) DNA (b) RNA (c) **both DNA and RNA** (d) Protein

- 41) The terms triplet code and genetic code were coined by
 (a) Watson and Crick (b) Nirenberg (c) **Gamow** (d) Conrat
- 42) Beadle and Tatum produced mutant strain of Neurospora by
 (a) **X-rays** (b) U.V. rays (c) beta rays (d) gamma rays
- 43) components of an operon are
 (a) operator, promoter and regulator genes (b) **regulator, promoter, operator and structural genes**
 (c) operator, regulator and structural genes (d) regulator, promoter and structural genes
- 44) UAA, UAG and UGA condons are designated as
 (a) Stops con (b) Non- sense condons (c) **Both (a) and (b)** (d) initiator consons
- 45) Silent mutations in DNA are not expressed due to
 (a) universality of genetic material (b) nonambiguous nature of genetic code (c) **degeneracy of genetic code**
 (d) DNA is linear
- 46) Triplet code in genetics is
 (a) fixed (b) ambiguous (c) **degenerative** (d) nonwobbly
- 47) Which of the following nitrogenous bases are common for both RNA and DNA?
 (a) **C, G, A** (b) G, A, U (c) T, A, C (d) U, A, C
- 48) mRNA is in fact
 (a) **Unprocessed rRNA** (b) Processed hnRNA (c) Unprocessed hnRNA (d) Processed mRNA
- 49) If the length of a DNA molecule is 1.1 metres, what will be the approximate number of base pairs _____.
 (a) 3.3×10^6 bp (b) 6.6×10^6 bp (c) **3.3×10^9 bp** (d) 6.6×10^9 bp



Find out A, B and C in the above pictorial representation

- (a) **A - Transcription, B - Translation, C - Replication** (b) A - Transcription, B - Translation, C - Replication
 (c) A - Replication, B - Translation, C - Transcription (d) A - Replication, B - Transcription, C - Translation